

Resonant scattering studies of nanoscale magnetism

Jeff Kortright
MSD, LBNL

The large resonances in charge and magnetic scattering factors at 3d transition metal L edges enables a variety of important measurements, including NEXAFS, XMCD, PEEM and zone-plate imaging using these as contrast mechanisms, and different types of scattering measurements. Because q -resolved resonant scattering and diffraction result from heterogeneity, such measurements are quite sensitive to charge and magnetic structure, and the variation of magnetic structure with applied field. This talk will review the basics of scattering theory, and will then summarize several studies utilizing resonant scattering to resolve magnetic and charge scattering in a variety of magnetic systems of current interest, including domains in Co/Pt films with perpendicular anisotropy, magnetic correlation lengths in recording media, and dipolar interactions between superparamagnetic nanoparticle assemblies.